

# Mind-boggling facts about science

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This contains facts about chemistry, quantum physics, psychology,  
astronomy, genetics, and physics

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# Physics

Before Einstein created the famous equation  $E = mc^2$ , Swami Vivekanand told Nikola Tesla about energy be equal to mass (in detail) in 1896, before 10 years Einstein published about  $E = mc^2$ .

At the first test site of a nuclear bomb, there was a scientist (father of nuclear bomb - Oppenheimer) who had said some famous words, I'm the destroyer of the world (form bhagavad Gita).

The Nobel prize is after the name of Alfred nobel, who created the dynamite.

Even Einstein got a whole well awaited universe model wrong. Einstein's statics universe is the theory in the universe is stationary, Edwin hubble's discovery of the relationship between redshift obliterated Einstein's model.

Even today in well developed schools show that electrons are tiny ball orbiting the nucleus in a elliptical shape, it's completely wrong as electrons are in super positioned in a large place with unpredictable movement.

Hubble's constant is the rate at which universe expands, it's equations, it's extremely crucial to understand the universe, new study's tell that the constants accuracy (the rate universe inflates) is unacceptable.

The Nobel prize is after the name of Alfred nobel, who created the dynamite, which he later regretted because of the misuse of dynamite and also for people foolishly killing themselves.

Hindu texts were one of the first to tell that there's something attracting everything to earth (which is now gravity).

- The Higgs boson (also called the god particle) is the particle that gives mass to everything in the universe that has mass. When the CERN LHC was going to be used for the first time, everybody was worried as, if there was Higgs boson, and if it gets unstable, it would cause an explosion of energy that would consume everything in the known universe and upend the laws of physics and chemistry.
- The one-way speed of light is uncertain, even Einstein in his equations thought about this. The speed told in books are 299,792,458 meters/sec, it's the one way speed of light, it can be completely wrong as nothing can measure the one way speed of light, you might be saying putting two clock with sensors which can tell the one way speed of light, not it can't a, if the clock is moved, the special relativity will make it out of sync with the first clock, for that you might think putting a fibre wire connected to both of them, but the fastest speed achieved in the fibre wire is the speed of light so it can't be used but, the two way speed of light can be measured, then the problem arises , that is the speed of light be the same in all direction, you might think this question is invalid (most scientist know this and do not deny it) but the universe is very odd (whys there more matter than antimatter, why is the universe not chaotic, etc), so it's impossible to know the one way of speed of light so for example a person on Mars will get a message in 10 minutes , a person on earth sends it, after 10 minutes the person on Mars gets the message, for that to know the person on Mars has to send a message to Earth, which will also take 10 minutes (this all is known by both the person on Mars and the person on Earth), if the speed of light is infinite on one side which here will be earth to Mars and it takes 20 minutes to light to get to earth from Mars. No one could know this as if there was a clock with both of them, due to time dilation the clock will be out of sync so we can never know this, this would cause the general relativity, special relativity, etc to collapse (in the sense that they would be wrong if the light speed not being the same in all direction is true).
- Methuselah is a star older than the universe, it's true, this physics is not wrong and it has been repeatedly tested. It could also mean that our universe is not 13.8 billion years but 11.8 billion years old.

# Mix

- Super positioning means that a particle is at more than one place at the same time
- Quantum tunnelling is something that affects our daily lives, it's when particles go through thin walls. It happens in processors inside our phone but for that, they use other materials or some other solution
- Photons do not experience time so if the photon was emitted trillions of years ago, there's no time it will experience between the emission of it and absorption of it
- Two humans typically share around 99.9% of the same genetic material
- Humans share about 90% of genetic material with mice and 98% with chimpanzees
- In quantum physics you can't know the state of some particle you look at it so until the particle is observed, it is in superposition
- Everything in quantum mechanics is in waves
- Quarks are particles that make protons and neutrons
- Strange quark is a kind of quark that when touched, will change everything into a strange quark (it's unknown what happens under high and low electromagnetism, magnetic field, pressure, etc), it is thought to be found inside neutron stars
- A star can not be as big as anything, it has a limit, or else it collapses into white dwarfs, neutron stars, and black holes
- We often think more about a person than a catastrophic event that might happen
- By taking study notes in longhand, your brain can remember because writing exactly what you study help you retain better knowledge
- Lightning strikes produce Ozone, hence the characteristic smell after lightning storms
- Satyendra Nath Bose worked with Einstein to discover a series of particles called bosons

- The only two non-silvery metals are gold and copper
- There are shape memory alloys like nitinol which changes into their original form when heated, when electricity is applied, etc
- Superconductivity is a surprising takeoff from the properties of typical channels of power. In materials that are electric channels, a portion of the electrons are not bound to singular molecules however are allowed to travel through the material; their movement establishes an electric flow
- A superfluid is the state of matter where matter acts like a liquid with zero viscosity. The substance flow without friction past any surface which allows it to continue to circulate over obstructions and through pores in containers that's holding it, subject only to its inertia
- A supersolid is a spatially ordered material (which means it has a structure that is ordered like a crystal and most solids) with superfluid properties. It can be created by helium-4 as it acts like a boson
- Super condensed matter:
  - Neutron matter is found in neutron stars where there is immense gravity and about no space between atoms.
  - Quark matter/Quark gluon plasma is a theoretical matter thought to be found in neutrons stars too, in the core where the gravity and the pressure makes the neutron break into quarks and gluons (gluon is a force that holds quarks together), it will be something like plasma but in so much pressure that it won't move, just like a solid
- All of the stars we see with our eyes in the night sky out bigger than our sun
- Subrahmanyan Chandrasekhar is the person who found the limit of the size and mass of the star, white dwarf, neutron star, and then at the end, it collapses to the black hole
- India was the first one to make a communication device but the person who made it told me that the world should grow, it should not stop because of me, so he did not patent it.

Thank

you

